भारतीय मानक
Indian Standard

IS 681 : 2015
(Reaffirmed 2019)

वस्त्रादि — उनी और वरस्टिड धागे की सार्वभौमिक सूतांक ज्ञात करने की विधियाँ

(पहला पुनरीक्षण)

Textiles — Methods for Determination of Universal Count of Woollen and Worsted Yarn

(First Revision)

ICS 59.080.30

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
मानक भवन, 9 बहादुरशाह ज़फर मार्ग, नई दिल्ली-110002
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI-110002
www.bis.org.in www.standardsbis.in

August 2015 **Price Group 2**

Physical Methods of Test Sectional Committee, TXD 01

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Physical Methods of Test Sectional Committee had been approved by the Textile Division Council.

This standard was first published in 1964 and has been revised to incorporate the following major changes:

a) FPS system values have been deleted.
b) Chemicals used for extraction of the test specimen have been changed.
c) Method of preliminary extraction of the test specimen has been modified.

The composition of the Committee responsible for the preparation of this standard is given in Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

TEXTILES — METHODS FOR DETERMINATION OF UNIVERSAL COUNT OF WOOLLEN AND WORSTED YARN

(First Revision)

1 SCOPE

This standard prescribes two methods for determination of universal count of woollen and worsted yarn. The methods are applicable to single or plied yarn.

NOTE — In the case of plied yarn, the methods are applicable for the determination of resultant count of the yarn.

2 PRINCIPLE

The first method is based on determining the weight of the specimen after conditioning it in the standard atmosphere. The second method is based on determining the weight of the specimen by drying it in a drying oven and calculating from this weight, its conditioned weight by adding the moisture regain value.

3 TERMINOLOGY

3.0 For the purpose of this standard, the following definitions shall apply.

3.1 Package — A general term for a bobbin, bundle, cheese, cone, cop or pirn of yarn indicating that the yarn is in a form convenient for transport and further processing.

3.2 Universal Count, in tex — Universal count is a number indicating the weight per unit length, the basic unit of which is the tex. When universal count of yarn is expressed in tex, the count value indicates the weight in grams of one kilometer of yarn.

NOTE — The weight per unit length of fibres as well as textile products like ropes, rovings, etc, may also be expressed in universal count system and in such cases, the following sub-multiple and multiple units may be used to avoid small fractions and large numbers respectively:

1 m tex (milli-tex) = 0.001 tex

1 k tex (kilo-tex) = 1 000 tex

4 SAMPLING

4.1 Lot

All the bales (or cases) of yarn of the same count and quality delivered to one buyer against one dispatch note shall constitute a lot.

4.2 The conformity of a lot to a specification shall be determined by tests carried on sample selected from the lot.

4.3 Unless otherwise agreed upon between the buyer and the seller, the number of bales (or cases) to be selected at random from the lot shall be in accordance with col 2 and 3 of Table 1.

4.4 From each bale (or case) selected as in **4.3**, two packages shall be selected at random.

4.5 From each of these packages two skeins shall be reeled off, each from a different portion, on a wrap reel with a girth of 1 m. When being reeled, the yarn shall be kept under sufficient tension to avoid kinks, curls and slacks in the yarn on the one hand, and stretch on the other, operating the reel at a speed of about 100 rev/min. The length of each skein so reeled shall be in accordance with the applicable requirements of Table 2. All such skeins shall constitute the test specimens.

Table 1 Number of Bales (or Cases) to be Selected

(*Clause* 4.3)

Sl No.	Number of Bales or Cases in the Lot	Number of Bales or Cases to be Selected at Random
(1)	(2)	(3)
i)	3 or less	1
ii)	4 to 10	2
iii)	11 to 30	3
iv)	31 to 75	4
v)	76 or more	5

Table 2 Length of Specimen

(*Clause* 4.5)

Sl No.	Universal Count	No. of Turns of the Reel	Length of Specimen m
(1)	(2)	(3)	(4)
i)	Below 20 tex	100	100
ii)	20 tex to 50 tex	50	50
iii)	Above 50 tex	25	25

5 ATMOSPHERIC CONDITIONS FOR TESTING

5.1 The test prescribed in **9.2.1** shall be carried out in a standard atmosphere at 65 ± 2 percent relative humidity and 27° ± 2°C temperature provided that throughout the test, the temperature does not vary by more than 1°C.

6 CONDITIONING OF TEST SPECIMENS

6.1 For the purpose of **9.2.1**, the test specimens shall be conditioned prior to evaluation in a standard atmosphere at 65 ± 2 percent relative humidity and 27° ± 2°C temperature, for 12 h.

6.2 Prior to conditioning, the test specimens shall be pre-conditioned for 1 h in a relative humidity of 10 percent and temperature of 50°C.

7 REAGENTS

7.1 Quality of Reagents

Unless specified otherwise, pure chemicals shall be used for the purpose of this test.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the test results.

7.2 For the purpose of this test, the following reagent shall be used.

7.2.1 *Dichloromethane*

8 APPARATUS

8.1 Drying Oven, preferably of the ventilated type with positively induced draught, capable of maintaining an inside temperature of 105° C to 110°C and provided with a balance capable of weighing correct to 0.01 g.

NOTE — If the oven is not provided with a balance, a suitable container to weight the samples to constant weight may be used.

8.2 Pan Balance, with weights in grams and capable of weighing accurate to 0.01 g.

9 PROCEDURE

9.1 Preliminary Extraction of the Test Specimen

Take a specimen (*see* **4.5**) and extract it with dichloromethane. Dry the specimen in air.

NOTE — If the agreement between the buyer and the seller so provides, the test specimen may not be treated for preliminary extraction; the fact shall, however, be stated in the test report.

9.2 Determination of Count

Determine the count of yarn by any one of the following methods, as agreed to between the buyer and the seller or as specified in the material specification. In case of dispute, however, the method prescribed in **9.2.2** shall be followed.

9.2.1 *First Method*

Condition the test specimen (*see* **6.1**). Weigh it correct to 0.01 g and note its weight. Calculate its universal count in the manner prescribed in **10**.

9.2.2 *Second Method*

Transfer the test specimen (*see* **9.1**) to the drying oven and dry it to constant weight (*see* Note). Determine the oven-dry weight of the test specimen.

NOTE — Constant weight may be assumed to have been attained by the specimen when two successive weighing at intervals of 20 min differ by less than 0.05 percent.

9.2.2.1 Calculate the conditioned weight of the test specimen by the formula given below:

$$\text{Conditioned weight of the test specimen} = \frac{A \times (100 + R)}{100}$$

where

A = oven-dry weight of the test specimen, and

R = moisture regain value of 18¼ percent for unchlorinated woollen and worsted yarns and 16 percent for chlorinated woollen and worsted yarns.

10 CALCULATION AND REPORT

10.1 Calculate the universal count of the test specimen using the formula given below.

$$\text{Universal count, in tex} = \frac{W}{L} \times 1\,000$$

where

W = weight in g of the test specimen determined either as in **9.2.1** or **9.2.2.1**, and

L = length in m of the test specimen.

10.2 Repeat the procedure prescribed in **9.1** and **9.2** with the remaining test specimens in the sample and determine their universal count in tex.

10.3 Calculate the mean of all the values and report it as the universal count in tex of the yarn in the lot. Report also the method followed for determining the universal count.

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Physical Methods of Test Sectional Committee, TXD 01

Organization	*Representative(s)*
Central Institute for Research on Cotton Technology, Mumbai	Dr S. K. Chattopadhyay (***Chairman***)
Ahmedabad Textile Industry's Research Association, Ahmedabad	Dr A. K. Sharma Shrimati Seema Patel (*Alternate*)
Alok Industries, Silvassa	Representative
Bidhata Industries Pvt Ltd, Mumbai	Shri R. K. Pacheriwala Shri Rohit Pacheriwala (*Alternate*)
Central Institute for Research on Cotton Technology, Mumbai	Dr R. P. Nachane Dr Pradeep Mandhyan (*Alternate*)
Chhotanagpur Rope Works Pvt Ltd, Kolkatta	Shri Siddharta Jhawar Shri Anurag Jhawar (*Alternate*)
Delta Ropes Manufacturing Co, Kolkatta	Shri Anand Majaria
Directorate General of Supplies & Disposals (Inspection Wing), New Delhi	Shri Sunder Lal Shri D. S. Martoliya (*Alternate*)
Garware Wall Ropes Ltd, Pune	Shri Sanjay Vasudeo Raut Shri S. G. Paluskar (*Alternate*)
Indian Jute Industries Research Association, Kolkatta	Shrimati Saumita Choudhury Shri D. P. Don (*Alternate*)
Intertek Testing Services (I) Pvt Ltd, Mumbai	Shri Hemant Parab Shri Narayan B. Borade (*Alternate*)
Man-made Textile Research Association, Surat	Dr S. K. Basu Shri Rakesh S. Chauhan (*Alternate*)
Ministry of Defence (DGQA), Kanpur	Shri P. P. Naidu Shri P. C. Basu (*Alternate*)
North India Textile Research Association, Ghaziabad	Shri A. K. Singh Shri Vivek Agrawal (*Alternate*)
Office of Textile Commissioner, Mumbai	Shri Jamil Ahmad (*Alternate*)
Reliance Industries Ltd, New Delhi	Shri M. S. Verma Shri S. K. Sarkar (*Alternate*)
Testtex India Pvt Ltd, Mumbai	Shri Mahesh Sharma Shrimati Meeta Shingala (*Alternate*)
Texanlab, Thana	Shri V. A. Bhajekar Shrimati Nalini Kamat (*Alternate*)
Textiles Committee, Mumbai	Shri Kartikay Danda Shri S. G. Pathy (*Alternate*)
The Arvind Mills Ltd, Ahmedabad	Shri Kamlesh A. Patel Shri Nitin S. Chokshi (*Alternate*)
The Bombay Textile Research Association, Mumbai	Shri C. H. Sakharkar Shrimati Priya Bansode (*Alternate*)
The Raymond Woollen Mills Ltd, Thane	Shri R. S. Majumdar Shri S. K. Som (*Alternate*)
The South India Textile Research Association, Coimbatore	Dr Prakash Vasudevan
The Synthetic and Art Silk Mills' ResearchAssociation, Mumbai	Dr M. R. Mathur Shrimati A. A. Sudam (*Alternate*)
TUV Rheinland India Pvt Ltd, Gurgaon	Shri Charan Singh Shri Ashok Mehra

Organization	*Representative(s)*
Wool Research Association, Thane	SHRI T. R. RAO SHRI V. C. PANSE (*Alternate*)
BIS Directorate General	SHRI PRABHAKAR RAI, Scientist 'E' and Head (TXD) [Representing Director General (*Ex-officio*)]

Member Secretary
SHRI J. K. GUPTA
Scientist 'C' (TXD), BIS

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 1986 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards : Monthly Additions'.

This Indian Standard has been developed from Doc No.: TXD 01 (0968).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones : 2323 0131, 2323 3375, 2323 9402 *Website*: www.bis.org.in

Regional Offices: *Telephones*

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002 — 2323 7617, 2323 3841

Eastern : 1/14 C.I.T. Scheme VII M, V. I. P. Road, Kankurgachi, KOLKATA 700054 — 2337 8499, 2337 8561, 2337 8626, 2337 9120

Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160022 — 260 3843, 260 9285

Southern : C.I.T. Campus, IV Cross Road, CHENNAI 600113 — 2254 1216, 2254 1442, 2254 2519, 2254 2315

Western : Manakalaya, E9 MIDC, Marol, Andheri (East), MUMBAI 400093 — 2832 9295, 2832 7858, 2832 7891, 2832 7892

Branches: AHMEDABAD. BENGALURU. BHOPAL. BHUBANESHWAR. COIMBATORE. DEHRADUN. FARIDABAD. GHAZIABAD. GUWAHATI. HYDERABAD. JAIPUR. KOCHI. LUCKNOW. NAGPUR. PARWANOO. PATNA. PUNE. RAJKOT. VISAKHAPATNAM.

Published by BIS, New Delhi